

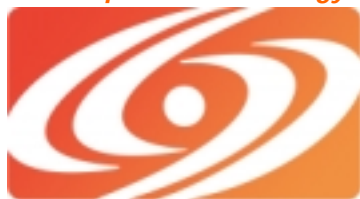


***U.S. Department of Energy's
Office of Science***

**Results of the Assessment of the
Run II Luminosity Plan
at the Fermilab Tevatron
July 21-23, 2003**

**Presented to the
High Energy Physics Advisory Panel**

Daniel R. Lehman
*Construction Management
Support Division
July 25, 2003*



Review Subcommittees

Department of Energy Assessment of the
Run II Luminosity Plan at the Fermilab Tevatron
July 21-23, 2003

Daniel R. Lehman, Chairman (DOE)

SC1

Accelerator Physics

Steve Peggs, BNL*
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Francesco Ruggerio, CERN

SC2

Proton Source

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Uli Weinands, SLAC
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SC3

Anti-Proton Source

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Flemming Pedersen, CERN
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Observers

Aesook Byon-Wagner, DOE/SC
Michael Procario, DOE/SC

Legend

SC Subcommittee
* Chairperson
[] Part-time Subcommittee
Member

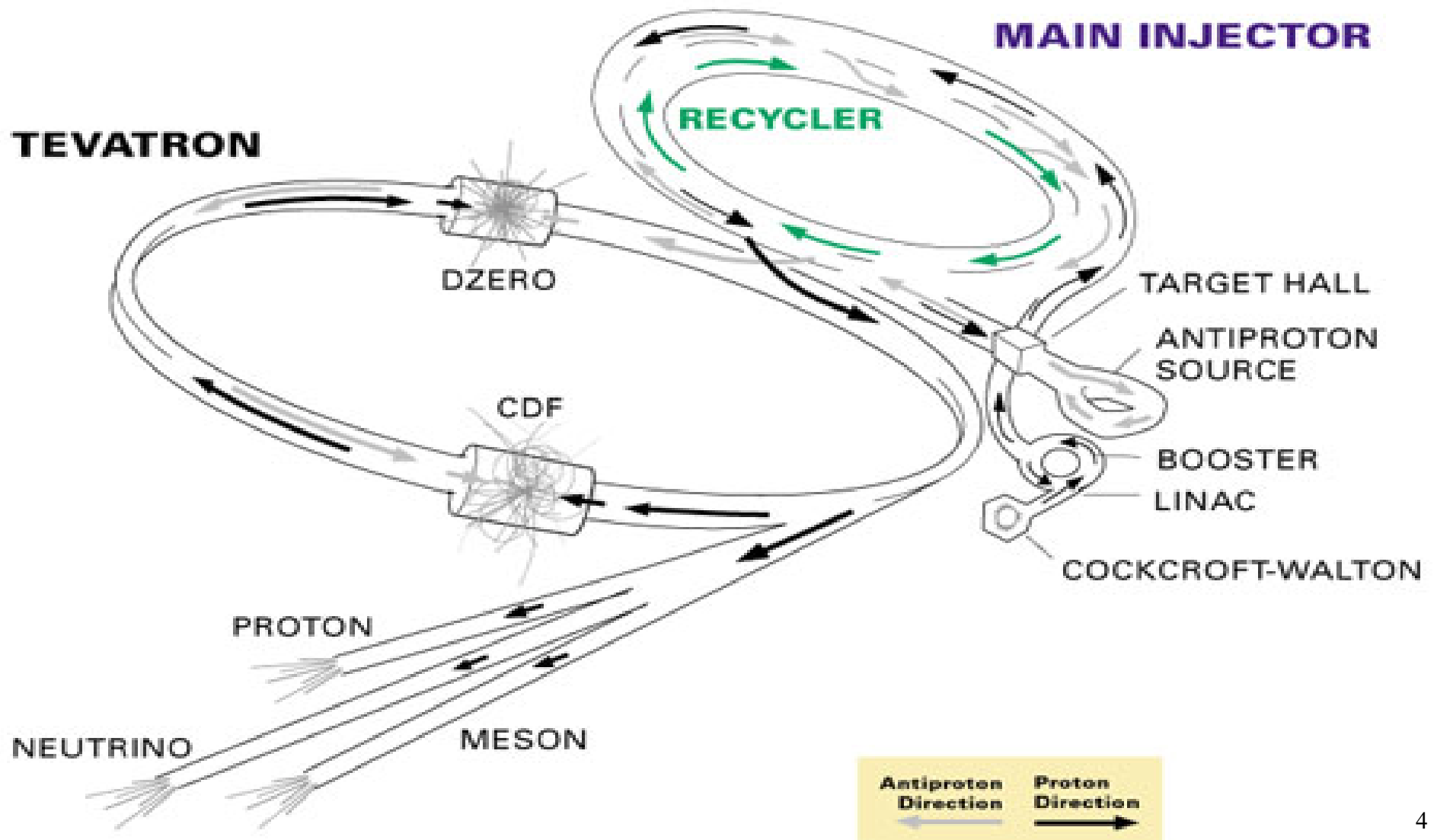
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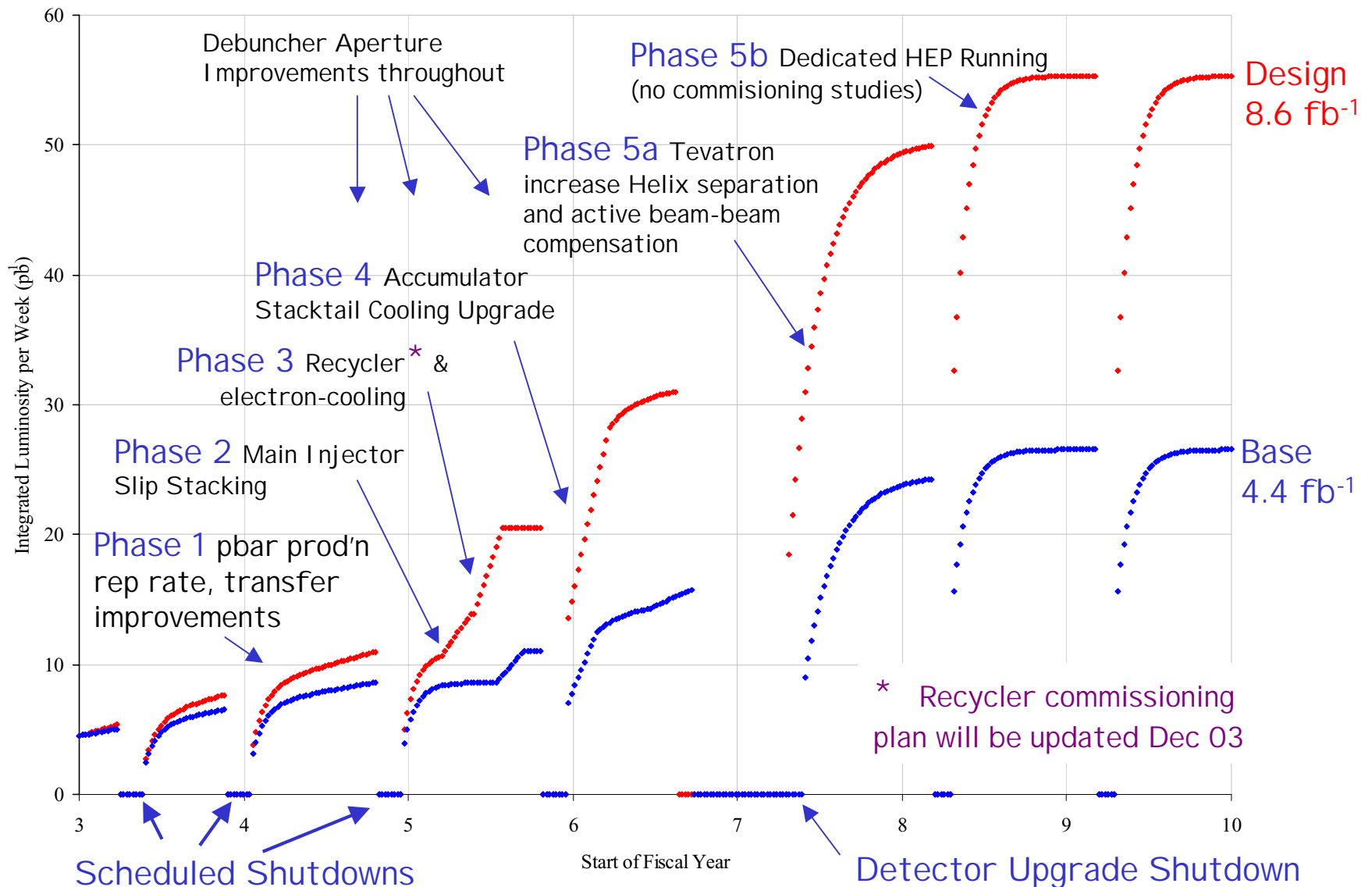
Run II Luminosity Improvements

- § Run II is not a construction project
- § Run II is a complex campaign of operations, maintenance, upgrades, R&D and studies

Fermilab's ACCELERATOR CHAIN



Weekly Luminosity and Phases





Integrated Luminosity

	Integrated Luminosity (fb ⁻¹)			
	base		Stretch	Design
	Oct '02	Jun '03	Oct '02	Jun '03
FY03	0.3	0.3	0.4	0.3
FY04	0.7	0.6	1.0	0.7
FY05	1.7	1.0	2.5	1.4
FY06	3.2	1.5	5.0	2.2
FY07	4.7	2.1	8.0	3.8
FY08	6.5	3.3	11.0	6.2
FY09	8.3	4.4	14.0	8.6

with Recycler
and electron cooling



Projections

Difference between Oct '02 and June '03

- § bottom-up vs top-down planning and projections
- § extensive modeling of Tevatron complex
- § operations model based on current experience
- § change in how recycler ring being used (from Recycler Ring to Storage Ring)
- § include schedule contingency
 - more realistic projection



Results of the Assessment

- § The Challenge
- § The Plan
- § The Plan's Projections
- § The Bottom Line



The Challenge

- § Fermilab is **working hard** to operate, maintain, and upgrade the Tevatron Complex
- § Proactive, well-integrated **involvement from all Divisions** is required
- § The new management **team must effectively lead and manage** many technically complex activities to succeed
- § Achieving the scientific potential of the Tevatron Complex will be a **great challenge for the whole Lab.**



The Plan

- § Fermilab has **developed** an ambitious “**bottoms-up**” Plan
- § The **Recycler** commissioning and operations plan **needs to be integrated** into the Plan
- § **Too early to tell** if the Plan is realistic
- § Our next review will determine if the Plan is good and Fermilab is able to execute



The Plan's Projections

- § The Plan projects two possible luminosity profiles through FY09
 - § A **“design projection” of 8.6 fb⁻¹**
 - § A **“base projection” of 4.4 fb⁻¹**
- § Both **rely on electron cooling in the Recycler** (a very significant uncertainty)
- § **The Committee concluded ~4 fb⁻¹ by the end of FY09 has a reasonable probability of success**
- § Meeting the FY09 design projection of **8.6 fb⁻¹ is very challenging**



The Bottom Line

The Committee...

- § Will watch to see if the new team can lead and overcome organizational and technical issues
- § Anticipates a clearer picture of the expected contribution of electron cooling
- § Looks forward to the Tevatron complex being a platform for cutting-edge upgrades – reliable and well-characterized
- § Will look for performance that shows the plan is achievable